UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	AC DC converter
Model:	AIF06ZPFC-01XXXXX & AIF06ZPFC-02XXXXX where X is blank or any alphanumeric characters for different customer/product identity
Rating:	AC Input: 100-120V, 50/60Hz, 19A max. DC Output: 400V, 3.5A max. ; Maximum continuous total output power is 1400W AC Input: 200-240V, 50/60Hz, 19A max. DC Output: 400V, 6A max. ; Maximum continuous total output power is 2400W
Applicant Name and Address:	ASTEC INTERNATIONAL LIMITED 16TH FLOOR, LU PLAZA 2 WING YIP STREET, KWUN TONG, KOWLOON, HONG KONG

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared By: Brian Wong / Project Handler Reviewed By: Patty Li / Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.

ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.

iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

- This is a build-in type non-isolated AC to DC converter.
- Basic insulation is provided between primary circuit and metal base plate.

Model Differences

AIF06ZPFC-01XXXXX is same as AIF06ZPFC-02XXXXX except for jumper JP1500 on the baseplate of AIF06ZPFC-02

Test Item Particulars

Classification of use by	Ordinary person
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	To be considered in end system
Considered current rating of protective device as part of building or equipment installation	30 A; building;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient	Maximum baseplate temperature of 100 ℃
IP protection class	IPX0
Power Systems	TN TT
Altitude during operation (m)	4000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	Approx. 0.28 kg

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : Maximum baseplate temperature of 100 ℃
- The product is intended for use on the following power systems : TN, TT
- Considered current rating of protective device as part of the building installation (A) : 30
- Mains supply tolerance (%) or absolute mains supply values : +10%/-10%
- The equipment disconnect device is considered to be : To be considered in end system
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following product-line tests are conducted for this product : Earthing Continuity
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary – Earthed Dead Metal: 334.58 Vrms / 577.08 Vpk
- The following output circuits are at ES3 energy levels : All outputs
- The following output circuits are at PS3 energy levels : All outputs
- The maximum investigated branch circuit rating is : 30 A
- The investigated Pollution Degree is : 2
- An investigation of the protective bonding terminals has : not been conducted
- The following end-product enclosures are required : Mechanical, Electrical, Fire
- The maximum continuous power supply output (Watts) relied on forced air cooling from : 27.6 CFM fan at 1.5 cm applied at input side
- The power supply was evaluated to be used at altitudes up to : 4,000 m
- These products have no in-line fuse. Fuse (JDYX), Littlefuse, rated 25A, 500V was used during the test. A suitable fuse shall be provided by end-use equipment.
- The subject products are not intended to be repaired by service personnel in case of failure or component defect (unit can be thrown away).
- These products maintain basic insulation provided between primary circuit and metal base plate. Clearance was evaluated for altitude up to 4000m above sea level, overvoltage category II.
- Proper bonding to the end-product main protective earthing termination is: Metal base plate maybe connected to Earth during end product installation, proper bonding to be considered in the end product.

Additional Information

N/A

Additional Standards

The product fulfills the requirements of:

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listees or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number

Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"
Special Instructions to UL Representative	

BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	**Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.**					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
All models covered in this report	EUT	-	Primary to Secondary	1500	2100	1
BD1.2	**Earthing Continuity Test Exemptions – This test is not required for the following models:**					
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BD1.3	**Electric Strength Test Exemptions – This test is not required for the following models:**					
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BD1.4	**Electric Strength Test Component Exemptions – The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test.**					
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BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics
-	-	-	-	-	-

4.1.2	**TABLE: List of critical components**					**Pass**
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
Plastic Enclosure	Sabic Innovative Plastics US L LC	Ultem 1000	170 degC, V-0, min. 0.75mm thickness Refer to ID7-01 for overall dimension.	QMFZ2	UL (E121562)	
Main PWB	interchangeable	interchangeable	V-0, min. 130 deg C	ZPMV2	UL	
Control PWB	interchangeable	interchangeable	V-0, min.130 deg C	ZPMV2	UL	
Choke (L300)	Artesyn/ Astec	801-008120-XXXX (where X is any number which do not affect safety)	Min. 130 deg C. See enclosure ID4-01 for details.	--	--	
Bridge Rectifier (D300, D301)	IXYS	DSP45-12AZ	Min. 1200V, Min. 45A	--	--	
- Alternate	Interchangeable	Interchangeable	Min. 1200V, Min. 45A	--	--	
Power Transistor (Q300, Q301, Q302, Q303, Q304, Q305)	Infineon	IPL60R065C7	Min. 600V, 51A	--	--	
- Alternate	interchangeable	interchangeable	Min. 600V, Min. 51A	--	--	
Current Transformer (T300, T301)	3L Electronic	EE5.0-202U-10KHZ 800-003352-0202	125 degC. See enclosure ID4-02 for details.	--	--	
- Alternate	Delta	86H-18038 800-003352-0202	125 degC. See enclosure ID4-03 for details.	--	--	
Aux. Transformer (T1200)	Artesyn/ Astec	801-008121-XXXX (where X is any number which do not affect safety)	130 degC. See enclosure ID4-04 for details.	--	--	
Base Plate	Interchangeable	Interchangeable	Aluminium	--	--	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	Overall Bottom
Photographs	03-02	Overall top
Photographs	03-03	Input Side View
Photographs	03-04	Output Side View
Photographs	03-05	Component side with cover
Photographs	03-06	Main component side
Photographs	03-07	Main solder only
Photographs	03-08	Control solder side
Photographs	03-09	Control component side
Diagrams	04-01	Specification of Choke L300
Diagrams	04-02	Specification of Current Transformer T300, T301 by 3L
Diagrams	04-03	Specification of Current Transformer T300, T301 by Delta
Diagrams	04-04	Specification of Aux. Transformer T1200
Schematics + PWB	05-01	PWB layout for Main board
Schematics + PWB	05-02	PWB layout for Control board
Manuals	06-01	Instruction Manual
Miscellaneous	07-01	Dimension drawing of plastic enclosure
Miscellaneous	07-02	Label Artwork